Municipal Energy Resilience Program
Window Assessment
for
Memorial Hall
Wilmington, Vermont

Prepared for:
Town of Wilmington
Vermont Division for Historic Preservation

Prepared by:
Paula Sagerman, Historic Preservation Consultant
P.O. Box 365, Brattleboro, Vermont 05302
(802) 345-1092, pj.sage@live.com

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Memorial Hall Window Assessment

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Introduction

The Town of Wilmington (Town) has received a grant from the Vermont Municipal Energy Resilience Program that will be applied to energy efficiency improvements at the 1902 Memorial Hall, a Town-owned assembly and performance venue at 14 West Main Street. In April 2024, a "Municipal Energy Resilience Program Level I Energy Audit" report on Memorial Hall was prepared for the Town, and includes treatment recommendations for the thirty-nine windows in the building. The following Memorial Hall Window Assessment will further address the condition of the windows and provide treatment recommendations.

Memorial Hall is listed in the State Register of Historic Places and is a contributing resource in the Wilmington Village Historic District, which is listed in the National Register of Historic Places. Due to the historic status of the building and its "Area of Potential Effect" in the historic district, the effect of any proposed undertakings funded with MERP must follow the statutes of the Vermont Historic Preservation Act (VHPA), 22 V.S.A. Chapter 14. The MERP projects at Memorial Hall are also subject to the Memorandum of Agreement amongst the Vermont Department of Buildings and General Services, the Vermont State Historic Preservation Officer (SHPO), and the Vermont Advisory Council on Historic Preservation.

This report was completed by Paula Sagerman, Historic Preservation Consultant, of Brattleboro, Vermont, for the Town and the Vermont SHPO. A MERP Project Review Form will accompany this report.

Description and Historical Background

Memorial Hall was constructed in 1902 and is a 6,000 square foot, one-story, symmetrical, wood-framed, Colonial Revival Style assembly hall that faces north toward Main Street and has a deep setback from the street. The building has a rectangular footprint, stone foundation, and a front-gable roof with wood shake siding. The three bay wide front façade has a recessed centered doorway with a Colonial Revival enframement consisting of Doric columns on plinths that support a broken pediment with a full entablature and denticulated cornice with a keystone. Within the front pediment is a round-arched plaque that reads "Memorial Hall, 1902" in gold leaf. The fenestration of the building reflects the interior spaces, including the five-bay wide, 40' wide by 60' deep assembly hall, the hall's mezzanine at the front of the building, and the two-story 25' deep stage and additional backstage area at the rear, which share a raised gabled roof.

All of the windows of the building are wood units, mostly multi-paned. The front façade has six-pane vertical hopper windows flanking the doorway, and in the gable, there are three six-over-one units that light the assembly hall mezzanine. The entryway leads to a hallway flanked by a storage room on one side and restrooms on the other side; the storage room and one restroom are each lit by paired six-over-one windows. The assembly hall has five regularly-spaced openings at each side elevation; at the east elevation there are three windows flanked by doorways, and all of the openings at the west elevation contain windows. The windows are large eight-over-twelve units, and the doors have lower panels and nine-pane upper lights. The doors and windows are all surmounted by round-arched multi-pane fanlights. There is a doorway to the stage at the east elevation, which is no longer accessible, and a paired six-over-one window at the opposite side

of the stage, which is now blocked on the interior. The rear gable had a pair of six-pane windows; one window has been replaced with louvers. The basement is exposed at the side and rear elevations; there are vertical six-pane windows at this level below most of the assembly hall windows, and at the rear, there is a row of five single-pane square windows. The basement windows have been blocked on the interior with rigid insulation.

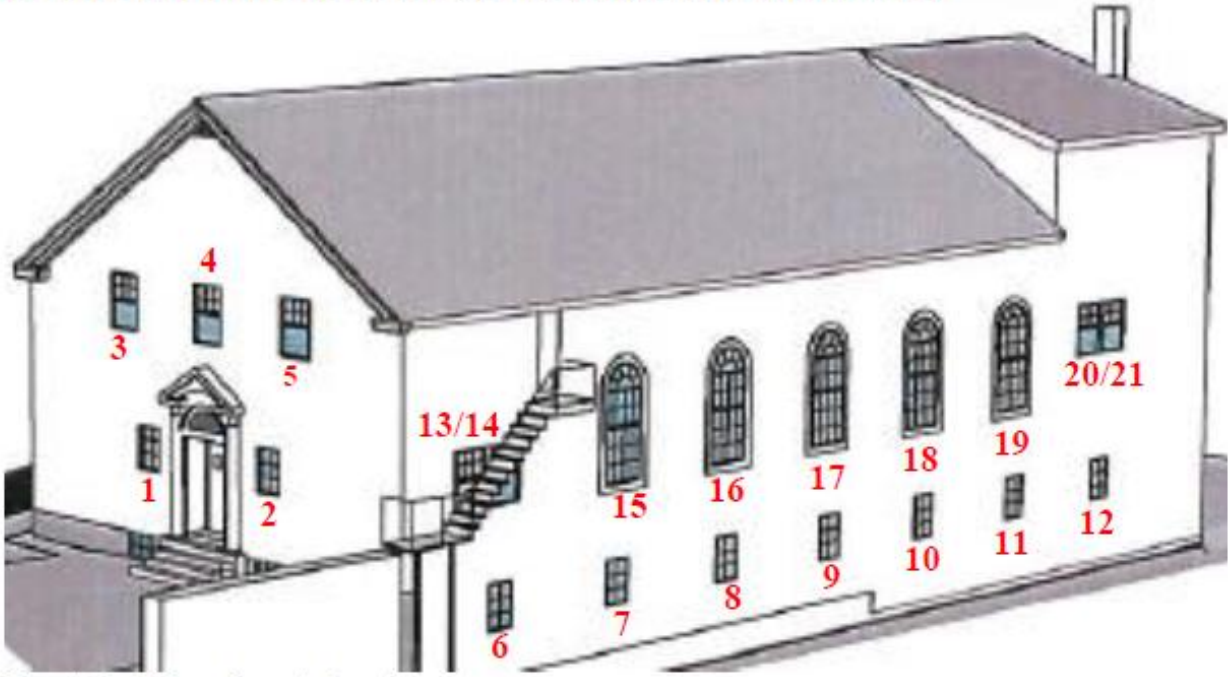
Childs Tavern on left, Memorial Hall on right, 1903. Source: *Vermont Phoenix*, January 2, 1903.

Memorial Hall was completed in December 1902. It was built for Wilmington resident Major Frederick W. Childs, who also had the 1902 Childs Tavern hotel constructed just to the east, which also remains intact. Memorial Hall was built as both an entertainment venue for the public as well as a place to honor and memorialize area soldiers who served in the Civil War. According to contemporaneous newspaper articles, the buildings were designed by architect Harry K. White of McKim, Mead & White of New York City, and constructed by H.C. Wood & Co. of North Adams, Massachusetts. Harry White (b. 1877) was from Brattleboro and earned a bachelor's degree in architecture at the Massachusetts Institute of Technology in 1899. That year, he began working for McKim, Mead & White (Charles McKim, William Mead and Stanford White) – one of the most prominent firms in the history of architecture in the United States – and the 1900 census indicates he was living in New York at the time and practicing as an architect. William Mead was also from Brattleboro, and it is believed that Childs procured the architectural services of the firm due to his familiarity with, and perhaps acquaintance with, Mead.

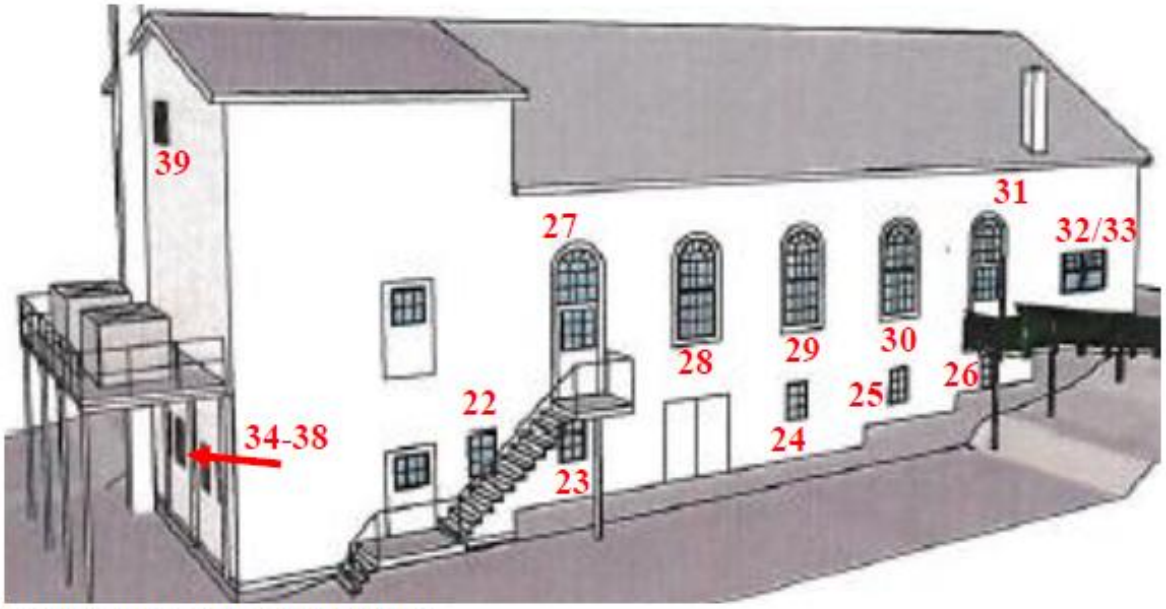
Statement of Significance

Memorial Hall is listed individually in the State Register of Historic Places and is a contributing resource in the Wilmington Village Historic District, which is listed in the National Register of Historic Places. Due to its distinctive architecture, high degree of integrity, provenance as an example of architecture designed by McKim, Mead & White, as well as its importance to the history of Wilmington, it is also recommended as individually eligible for the National Register of Historic Places. The architectural significance and degree of integrity are enhanced by the preservation of the original windows. These windows, particularly the large units with fanlights in the assembly hall, are significant and character-defining features of the building.

Elevations with Window Numbers (Drawings by LineSync Architecture)



Front (north) and west elevations



Rear (south) and east elevations

Facing south toward front (north) elevation.

Facing southwest toward east and front (north) elevations.

Facing southeast toward front (north) and west elevations.

Facing northeast toward west and rear (south) elevations.

Facing northwest toward rear (south) and east elevations.

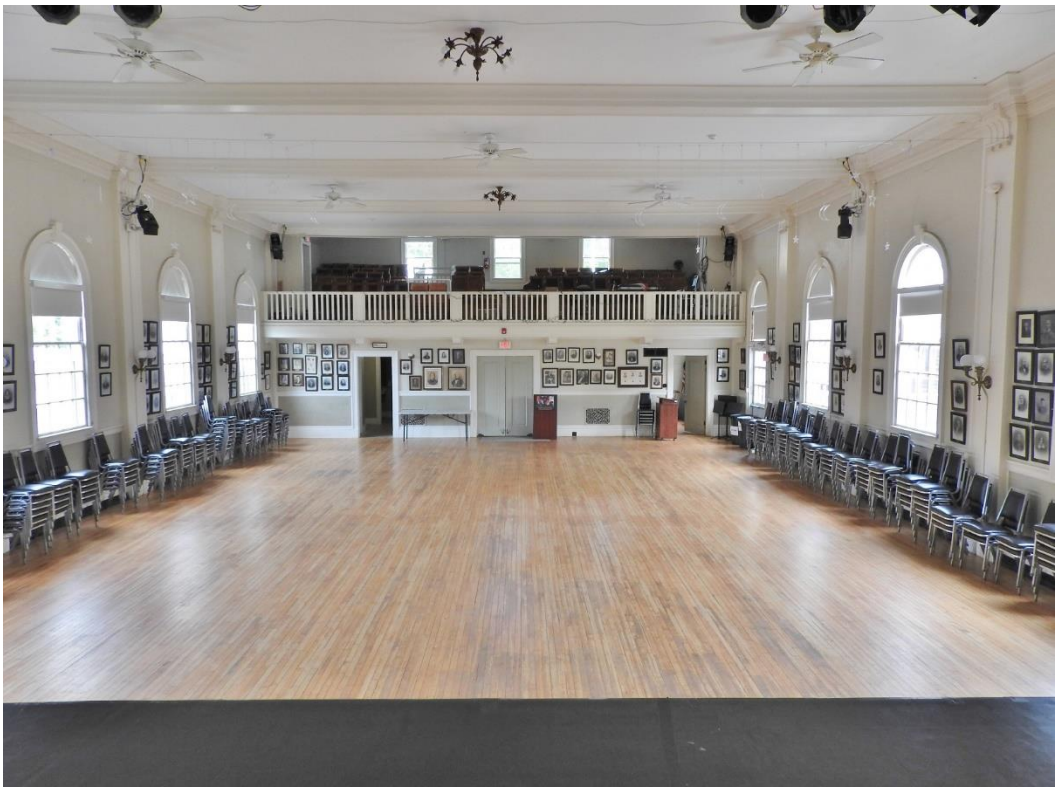
Facing northeast toward west elevation.

Facing southeast toward west elevation.

Facing northwest toward east elevation.

Facing southwest toward east elevation.

Facing south in assembly hall toward stage.



Facing north in assembly hall from stage toward front rooms and mezzanine.

Facing north toward mezzanine.

Facing east in assembly hall.

Facing west in assembly hall.

Facing southeast in basement under assembly hall.

Facing southwest in basement under assembly hall.

Window Assessment

The windows are generally in good condition, and the double-hung units are in operable condition in the occupied spaces such as the assembly hall, mezzanine, front storage room, and restroom. These windows are not 100% weathertight, and are protected with aluminum storm windows, many of which are broken, out of alignment, or have loose weather stripping. The basement windows and stage area windows have been blocked on the interior with insulation, and are deteriorated. No windows show signs of rot or are deteriorated beyond repair, but are in need of exterior reglazing, as well as repainting

Also, the window framing and sills have peeling paint. Unprotected wood is subject to moisture retention and rot, which could affect the condition of the adjacent window elements.

The following is a window-by-window assessment. The windows are numbered per the drawings on page 3.

Window 1. This hopper window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement.

Window 2. This hopper window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement.

Window 3. This double-hung window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. One sash of the storm window is missing.

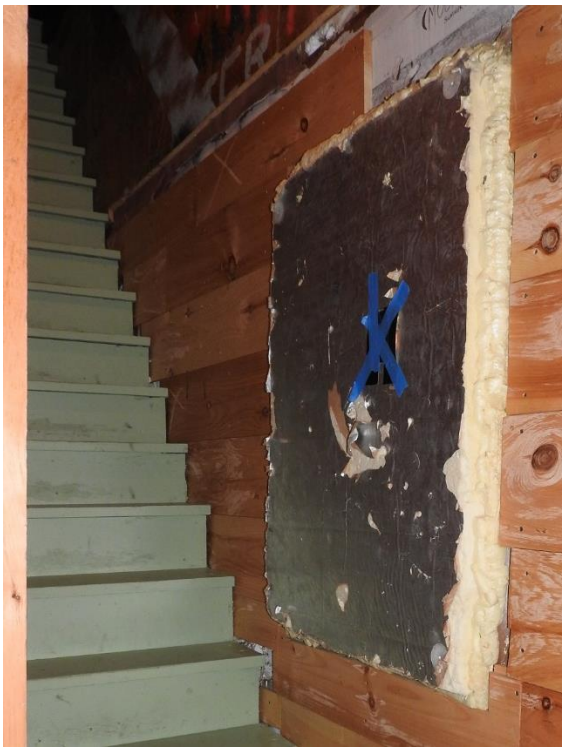
Window 4. This double-hung window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement.

Window 5. This double-hung window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement.

Windows 6 and 7. These hopper windows have areas of peeling paint, have been fixed closed, and the exterior glazing may need replacement. They are blocked on the interior with insulation.


Windows 8 and 9. These hopper windows have areas of peeling paint, have been fixed closed, and the exterior glazing may need replacement. They are blocked on the interior with insulation.


Windows 10 and 11. These hopper windows have areas of peeling paint, have been fixed closed, and the exterior glazing may need replacement. They are blocked on the interior with insulation.



Window 12. This hopper window has areas of peeling paint, has been fixed closed, and the exterior glazing may need replacement. It is blocked on the interior with insulation.

Windows 13 and 14. These double-hung windows are in good condition, have areas of peeling paint, and the exterior glazing may need replacement.

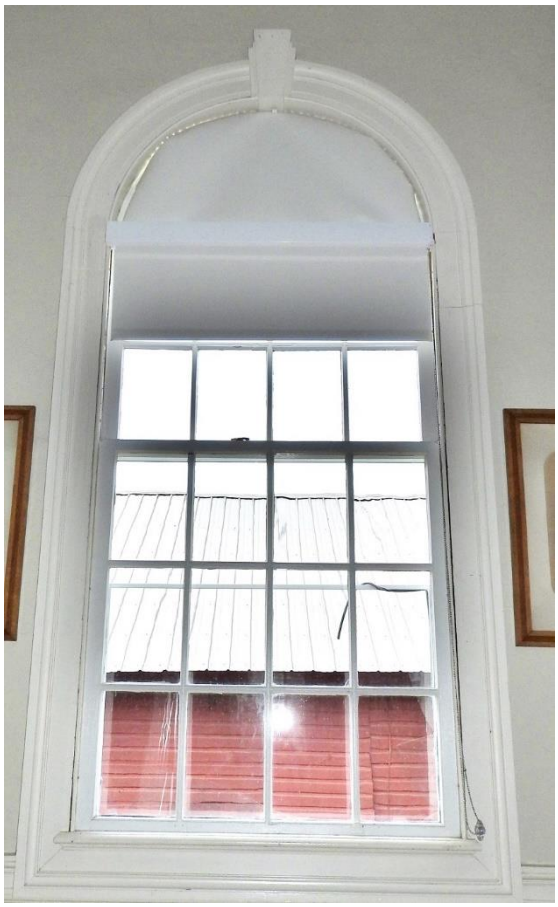
Windows 13 and 14

Window 15. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. Note how the meeting rails of the wood windows and storm window do not align.

Window 16. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. Note how the meeting rails of the wood windows and storm window do not align.

Window 17. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. Note how the meeting rails of the wood windows and storm window do not align.

Window 18. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. Note how the meeting rails of the wood windows and storm window do not align, and one storm sash is broken.



Window 19. This double-hung window is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. Note how the meeting rails of the wood windows and storm window do not align, and one storm sash is broken.

Windows 20 and 21. These double-hung windows are not properly closed, have deteriorated glazing, and broken storm sash. They are blocked on the interior.

Windows 22 and 23. These hopper windows have areas of peeling paint, have been fixed closed, and the exterior glazing may need replacement. They are blocked on the interior with insulation.

Window 24. This hopper window has areas of peeling paint, has been fixed closed, and the exterior glazing may need replacement. It is blocked on the interior with insulation.

Windows 25 and 26. These hopper windows have areas of peeling paint, have been fixed closed, and the exterior glazing may need replacement. They are blocked on the interior with insulation.

Window 27. This window and fanlight surmount a door. They are in good condition, with areas of peeling paint, and the exterior glazing may need replacement.

Window 28. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. On this side of the building, the meeting rails of the storm sash align with the wood windows, but some sash are out of alignment and there is loose weather stripping.

Window 29. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. On this side of the building, the meeting rails of the storm sash align with the wood windows, but some sash are out of alignment and there is loose weather stripping.

Window 30. This double-hung window with fanlight is in good condition, with areas of peeling paint, and the exterior glazing may need replacement. On this side of the building, the meeting rails of the storm sash align with the wood windows, but some sash are out of alignment and there is loose weather stripping.

Window 31. This window and fanlight surmount a door. They are in good condition, with areas of peeling paint, and the exterior glazing needs replacement.

Windows 32 and 33. These double-hung windows are in good condition, have areas of peeling paint, and the exterior glazing may need replacement.

Windows 34, 35, 36, 37 and 38. These basement windows are in good condition, with areas of peeling paint. The glass pane of Window 37 has been removed. All of the windows are blocked on the interior with insulation.

Window 39. This was originally a paired window. The remaining sash is in poor condition.

Recommendations

The "Municipal Energy Resilience Program Level I Energy Audit" report by Bureau Veritas recommends replacement of all of Memorial Hall's windows and does not include a discussion regarding the preservation of the existing windows and the potential for repairs and energy efficiency upgrades to the windows. As the authors were not tasked with addressing the historic status of the building and its significant features, the report does not note that the windows are a major character-defining feature of a National Register-listed resource.

Replacement of the windows is not recommended as it is not necessary as an energy efficiency upgrade and will adversely affect the historic appearance of the building. The windows are not deteriorated beyond repair and could be rehabilitated for energy efficiency without reducing their integrity. It should also be noted that the building is not used full-time, particularly overnight during the time of day with the coldest temperature, and there are other means of achieving energy efficiency, as defined in the energy audit report.

Many studies have been undertaken – including in cold climates – that show that appropriate upgrades to existing windows and the use of storm windows can provide the same level of energy efficiency as replacement windows, and do not cause the waste to the environment associated with the disposal of existing materials and the resources needed for the extraction, production, transportation and installation of new windows. One report, "Testing the Energy Performance of Wood Windows in Cold Climates," was prepared for the Vermont SHPO. This detailed report, which considered the cost of new windows utilized in housing development projects in Vermont, concluded that:

> As a result of the similarity in savings between upgrade types and the small savings indicated when existing windows were similar in performance to a typical or tight window, the decision to rehabilitate or replace a window generally should be made on the basis of considerations other than energy cost savings…window replacement will not necessarily reduce energy costs more than an upgrade utilizing the existing sash. The importance of the window frame/rough opening junction was noted throughout the study. An effective method of sealing this junction can greatly reduce the infiltrative thermal losses associated with any window renovation. Storm windows, either existing or replacements, were found to be effective in reducing both infiltrative and non-infiltrative losses.

Storm windows are an appropriate treatment for energy efficiency in historic buildings, and the existing storm windows at Memorial Hall should be replaced. This could either be with exterior operable units, or interior removable panels. Benefits of exterior storm windows also include the physical protection they provide to historic wood windows, the provision for screens for ventilation, and the prevention of condensation. As noted by James Garvin, retired State Architectural Historic of New Hampshire, "Because their glass is colder than that of the wooden windows, aluminum storm windows collect and condense moisture that circumvents the inner sashes. Because their metal frames cannot be harmed by moisture, aluminum storm windows safely handle condensation as long as wooden window sills are kept painted and the weep holes at the bottoms of the aluminum frames are kept open to drain properly." For Memorial Hall, the

visual effect of the bare metal can be reduced with the use of storm window frames that have been factory-painted white.

The most common treatment for upgrading wood window sash is the application of weather stripping (spring-metal, plastic strips, compressible foam tapes, or sealant beads). Window frames are often a source of air leakage, so this should be investigated. Further assessment and recommendations for the windows at Memorial Hall should be provided by a professional window restoration company, and there is an abundance of resources available online that address the window repair vs. replacement debate and recommendations for energy efficiency upgrades to existing windows. (See Resources below for contractors and sources of energy efficiency upgrade assistance.)

All work should follow the National Park Service's *Secretary of the Interior's Standards for Rehabilitation, Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings*, as well as the National Park Service Preservation Briefs #3, *Improving Energy Efficiency in Historic Buildings* and #9, *The Repair of Historic Wooden Windows*. These resources are listed below.

Resources

Window Rehabilitation Contractors

Thomas McLoughlin, Brattleboro, 802-254-9370, tom_mcloughlin@comcast.net
Adam Grimes, Brattleboro, 812-374-6705, adamgwindows@gmail.com
Pinnacle Window & Door, Keene, NH, https://pinnaclewindownh.com/

Storm Windows

Allied Window, Inc., https://www.alliedwindow.com/
Innerglass Window Systems, http://www.stormwindows.com/

Publications

Garvin, James. "Historic Wooden Windows."
http://james-garvin.com/images/Window_Sashes2.pdf

"Testing the Energy Performance of Wood Windows in Cold Climates."
https://windowpreservationalliance.org/resources/Documents/Library/Testing%20the%20Energy%20Performance%20of%20Wood%20Windows%20in%20Cold%20Climates.pdf

National Park Service

Secretary of the Interior's Standards for Rehabilitation, Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings.
https://www.nps.gov/orgs/1739/upload/sustainability-guidelines.pdf

Preservation Briefs #3, *Improving Energy Efficiency in Historic Buildings* and #9, *The Repair of Historic Wooden Windows*.
https://www.nps.gov/orgs/1739/preservation-briefs.htm

"Weatherization of Historic Buildings: Repair and Upgrade Windows and Doors:
https://www.nps.gov/articles/000/weatherization-of-historic-buildings-windows-and-doors.htm

National Trust for Historic Preservation

Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement
https://windowpreservationalliance.org/resources/Documents/Library/Saving%20Windows%20Saving%20Money.pdf

Historic Preservation Education Foundation

Window Rehabilitation Guide for Historic Buildings
The Window Workbook: Successful Strategies for Rehabilitating Windows in Historic Buildings.
https://www.hpef.us/windows.

Vermont Resources

Vermont Agency of Commerce and Community Development's "Historic Building Efficiency and Sustainability" website.
https://accd.vermont.gov/accd/historic-preservation/planning/building-efficiency